

Biospheric Sciences Highlights for September and October 2003

**** In Tropics, Forests are Cool but Croplands are Hotter**

A study of Santa Cruz, Bolivia, which used NASA satellites and computer models, reported that cutting down tropical forests and converting grasslands to crops may inadvertently warm those local areas. According to the research, forest canopies create wind turbulence that cools the air, and native grasslands are better adapted to the tropics than crops in ways that also have a cooling effect. A time series of Landsat data and the Simple Biosphere (SiB2) model were used to show that temperatures in January may have warmed on average by about 1 degree Fahrenheit in the last 25 years, solely because native forests and grasslands in Santa Cruz were replaced with crops. A NASA press release regarding the publication of this work in the Journal of Meteorology and Atmospheric Physics was posted on August 21, 2003.

The NASA press release regarding this research--Land Use and Local Climate: A Case Study near Santa-Cruz, Bolivia, L. Bounoua (Code 923), R.S Defries, M.L. Imhoff (Code 923), and M. K. Steininger, Journal of Meteorology and Atmospheric Physics--was carried by several news media below.

SPACE DAILY:

<http://www.spacedaily.com/news/earth-03za.html>

NATURAL WORLD TOURS (UK):

<http://www.naturalworldtours.co.uk/articles2003/august/august2303d.htm>

NEWSNOW (UK):

<http://www.newsnow.co.uk/newsfeed/?search=tropics&name=&x=6&y=6>

SUPERCOMPUTING ONLINE:

<http://www.supercomputingonline.com/print.php?sid=4226>

SCIGUY:

<http://sciguy.com/News/Article.asp?ArticleID=5398>

The web site for this top story NASA press release regarding this research is: <http://www.gsfc.nasa.gov/topstory/2003/0715bolivia.html>.

**** Northern Eurasia Earth Science Partnership Initiative
Science Review Meeting Held in Yalta, Ukraine**

Following the first Northern Eurasia Earth Science Partnership Initiative (NEESPI) Science Planning Workshop, which took place in Suzdal, Russia during April 21 to 25, 2003, a team of mostly U.S. and Russian scientists worked during the summer drafting a NEESPI Science Plan. The draft Science Plan was examined during a NEESPI Science Review Meeting during September 7-10 in Yalta, Ukraine -- a location that took on special significance for the assemblage of international participants, as Yalta had come to world-wide fame as the site of the post-war negotiations between Josef Stalin, Winston Churchill and Franklin Roosevelt. The main objective of the meeting, which was organized and conducted by Dr. Don Deering, Code 923, was to facilitate an independent group of international scientists and science program leaders in reviewing the scope of the science plan. The purpose was to gather suggestions to re-focus or fine tune the science plan to improve its relevance to and synergy with international research and operational programs in Earth sciences particularly in Europe, Ukraine, Japan and China as well as to garner support for prospective international, institutional participants and sponsors for the NEESPI program. Thirty-seven representatives participated in the Yalta meeting from Austria, China, England, France, Germany, Japan, Russia, Ukraine, and the U.S. Dr. Jeff Masek, Code 923, one of the Science Plan contributors from NASA GSFC, also participated in the meeting. The recommendations will be incorporated into the NEESPI Science Plan during the next few months. The meeting was supported primarily by the Land Cover and Land Use Change and the Hydrology Programs of NASA Headquarters.

**** Biospheric Sciences Branch scientists continue involvement
with joint NASA/USGS Invasive Species Forecasting System.**

Drs. Jeff Morisette and Jeff Pedelty (Code 923) conducted a field campaign and visited the director the National Invasive Species Science Center, members of the Grass-Roots "Tamarisk Coalition", and researchers in the US Forest Service. They investigated cheat grass and thistle in the Rocky Mountain National Park and then tamarisk and Russian olive along the Colorado River in and near Grand Junction, CO.

Previous to the field campaign, and in conjunction with the invasive species effort, Code 923 hosted Dr. Robin Reich of the Colorado State University College of Natural Resources. The visit included two days of discussion on the invasive species forecasting system and a seminar on spatial statistical estimation.

The field campaign and Dr. Reich's visit will help in the development of invasive species modeling scenarios related to the NASA-funded Computational Technologies and Carbon Science studies and the newly awarded REASON investigation to develop an Invasive Species Data System (headed by John Schnase, 930, and Jim Smith, 920).

Participants in the field campaign included Jeff Morisette and Jeff Pedelty (Code 923), Robert Baker (SSAI), Mohammed Kalkhan (CSU), Tracy Davern (CSU), Kristin Eickhorst (Univ. Maine), and Bill Cheatum (USFS).

**** Carbon Workshop Kicks Off Formal Collaboration with New University of Lisbon**

Three Biospheric Science Branch (Code 923) members (Compton Tucker, Jim Collatz and Jeff Privette), as well as current and past Branch Visiting Scientists (Ana Pinheiro and Nuno Carvalhais, both of New University of Lisbon (NUL) gave presentations at the Remote Sensing of Carbon Budget and Balance Workshop in Lisbon, Portugal on September 26. A former Branch member, Dr. Ranga Myneni of Boston University, also participated.

The Workshop, co-sponsored by NUL and the Luso-American Foundation, was designed both as an educational forum and as a formal kick-off to the increasing collaborative work between the institutions. To date, four NUL graduate students have been hosted by Tucker at Goddard. Three have returned to Lisbon to complete their projects, while one (Pinheiro) completed her work at Goddard and will soon join the Hydrospheric Sciences Branch (Code 974). Pinheiro's successfully defended her PhD thesis, "Directional Effects in Observations of AVHRR Land Surface Temperature Product over Africa," before the Workshop. Dr. Graça Carvalho, Director of the International Relations Cooperation Office of the Portuguese Ministry of Science, and Dr. Carlos da Camara, Vice-President

of the Portuguese Meteorology Institute, welcomed participants and expressed support of the growing collaboration.

Prior to the Workshop, Privette and Pinheiro visited several test sites in the Alentejo (savanna) region of Portugal, including a CARBOEUROFLUX site (with 30 m eddy flux tower) near Evora. Discussions are underway to develop this site into an EOS/CEOS Land Validation Core Site with an emphasis on productivity changes under climate change scenarios. NUL students would collect data through the school year and analyze it in cooperation with GSFC scientists.

**** NASA Cancels Landsat Data Continuity Mission (LDCM) Solicitation**

NASA has cancelled the LDCM implementation phase solicitation. This cancellation means that NASA will not award a contract to buy Landsat data from a privately-owned and commercially-operated satellite system under the terms of the solicitation. The solicitation was released in January 2003 and proposals were due by February 25.

This cancellation does not relieve the Government from its obligation to acquire Landsat-like data under the provisions of the Remote Sensing Policy Act of 1992 (Public Law 102-555). NASA and USGS are moving forward to consider other options for ensuring Landsat data continuity beyond Landsat data. Options under consideration include some other form of commercial data buy or an international consortium.

The decision was reported in a front-page article in the September 29 edition of Space News.

**** "Earth as Art" Receives USGS Shoemaker Award**

On Thursday, October 25, "Earth as Art: A Landsat Perspective" was honored with the 2003 USGS Shoemaker Award for Communication Product Excellence. The Shoemaker Award recognizes projects that convey scientific concepts with words and images that have a broad public appeal. Branch members Jeannie Allen, Code 923, and Laura Rocchio, Code 923, were among the Earth as Art project members recognized.

**** Ungar named as new chair-designate for the Working Group for Calibration and Validation by the Committee on Earth Observing Systems Secretariat**

Dr. Stephen Ungar, Code 923, was recently named as the new chair-designate for the Working Group for Calibration and Validation (WGCV) by the Committee on Earth Observing Systems (CEOS) Secretariat. Dr. Ungar will replace outgoing chair person Yves-Louis Desnos of the Earth Observation Applications Department of ESA-ESRIN (Frascati, Italy).

The CEOS Working Group on Calibration and Validation was established in 1984. This resulted from the recognition that calibration and validation activities should play a key role in all satellite Earth Observation missions to ensure the clear and quantitative understanding of the data they generate. The objectives of the WGCV are to enhance coordination and complementarity, to promote international cooperation, and to focus activities in the calibration and validation of Earth observations for the benefit of the CEOS members and the international user community.

**** New Project to Create North American Forest Disturbance Map from Landsat Archive**

Researchers in Biospheric Sciences (Code 923) and Terrestrial Information Systems (Code 922) have been awarded funding from NASA Headquarters to produce a 30-year Landsat-based record of surface reflectance and forest dynamics in North America. This four-year project will provide data products to both the North American Carbon Program and Applications users such as the USDA Foreign Agricultural Service (FAS) and the USDA Forest Service. The project will utilize the Landsat GeoCover product, a decadal (1975, 1990, 2000), ortho-rectified image database originally produced by Earth Satellite Corporation. NASA GSFC researchers on the project include Dr. Jeffrey Masek (PI) Code 923, Dr. Forrest Hall, Code 923, Mr. Edward Masuoka, Mr. Robert Wolfe, Dr. Eric Vermote, Dr. Alexei Lyapustin, and Dr. Nazmi El Saleous. Collaborators outside NASA GSFC include Dr. Warren Cohen (USDA Forest Service) and Paul Doraiswamy (USDA).